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## STATE OF LIFTING MECHANISMS IN UKRAINE AND URGENT MEASURES FOR ITS REPRODUCTION

*The article deals with urgent measures for finding the way out of deep crisis for lifting mechanisms in Ukraine. There has been emphasized that without the development of special programs with participation of municipal authorities, credit system, organizations serving the elevators, private investors, house owners (condominium), and so on, it is impossible to solve the problem. Particular attention has been paid to the organization of work and program development of financial support of elevators' update in terms condominium. It has been a proposal to Renovation of lifts using depreciation.*

**Keywords:** *lifting mechanisms, crisis, renovation, financial support.*

### Problem statement

Of the total number of lifts operating in Ukraine in 2015, 53.4% or 50 300 units have exhausted their lifetime of 25 years. In 2011, there were 41,700 units of such elevators in the housing stock. Aging elevators occurs more rapidly than new one appears. All this is related to the lack of financial resources for capital repairs, modernization or replacement of elevators. Development of a special program for elevators' update becomes the priority.

### Task statement

The main purpose of the article is to develop organizational and economic mechanism of reproduction lifts in Ukraine.

### Presentation of the main material

One of the main problems of housing and communal services is the current state of elevators in residential buildings. As of 05.04.2014 the number of lifts was 94.2 thousand of units, installed in 29 035 homes, hotels, offices, shopping centers and so on. Of the total number of lifts operating in Ukraine in 2015, 53.4% (50 300 units) have exhausted their lifetime of 25 years, in 2011, there were 41,700 units of such elevators in the housing stock. And all this is related to the lack of financial resources for capital repairs, modernization or replacement of elevators.

If in 1991, for example, in the elevator of a nine-storied house there were invested material costs and labor amounting to about 3 thousand UAH every month, today it is 700-900 UAH (3-4 times less). [1]

Lifetime of passenger and cargo lifts, according to All-Union State Standard 22011-95, is 25 years. But the practice of their exploitation indicates that with the appropriate level of maintenance and repairs elevators can operate over this period.

Analysis of the examination of more than 3,000 cranes and elevators showed that after 30 years of operation metal structure<sup>^</sup>

- 65% work in the reliable operation regime;
- 30% - controlled operation;
- 5% - in critical regime[2].

Given these results, we can optimistically say that elevators lifetime may be 30 years or more. In the new design of the lifts it is necessary to ensure not only the increase of durability and lifespan of elevators up to 50 years, but also include the reduction of energy consumption.

The solution of this issue can be provided under condition that in Ukraine there will be created a domestic-made elevator with the parameters: service life of at least 50 years and minimum power consumption. Today, new homes have lifespan of at least 50 years, that is why lifts must have lifetime of work for at least 50 years. too.

Resolution of All-Ukrainian Central Executive Committee and Council of People's Commissars of the USSR from 29.02.1928 "On housing rent and measures for resolving the use of housing in cities and towns" such costs, like maintenance of housing (including lifts) and depreciation (including lifts) were included in housing rent.

After a few years for improvement of the financial position of the USSR nations, it was decided to reduce the tariff for rent by extracting from it the costs of major repairs of residential buildings as well as elevators. Financing of these expenditures was planned to execute from the budget.

State funding has been successfully carried out until the early 90's of XIX century. Today the price of elevators' repairs has significantly increased. For example, in order to carry out the gear lifts repairs it must be paid from 1 to 3 annual costs for maintenance of the lift, and the electric motor - from 6 to 11 months.

Given the difficult economic situation in Ukraine in the last decade, government funding of overhaul works and replacement of elevators has significantly reduced.

Today public budgets to update the elevators are not enough. This is evidenced by the following information:

- The number of elevators that require:
  - a) major repairs - 12.5 thousand. units.
  - b) upgrade - 12.8 thousand. units.
  - c) replacement - 5.95 thousand. units.

Given the need for repairs is not only of lifting mechanisms, but also the housing stock, heating systems and water supply, it is clear that public funding can not be expected. Decentralisation involves the transfer of financial resources directly to local communities, to which in addition to cash assets assistant responsibility is transferred. The citizens themselves must decide how many elevators need to be replaced, what must be done now, and what the next year, certainly, by means of the commissions and inspections.

Throughout the latest period (2015-2016 years.) positive changes in funding elevators' update have been noticed in some cities. For example, in Nikolayev in half year 99 elevators were recovered, 15 - were completely overhauled, another 26 elevators were repaired.

In Lviv, an overhaul and modernization of 26 units of elevators was carried out by companies serving the elevator industry.

In Zaporizhya, using international grants, there was a credit taken for the replacement of elevators.

Brief description of the changes in Ukrainian elevator industry in 2015 in some cities of Ukraine is given in Table 1.

New opportunities in financing elevators appear in terms of condominiums. Technical maintenance of elevators still can be done through tariff per 1 m<sup>2</sup> of floor space, which includes lifts fee. Owner of the elevator, condominium, should on its own expense, not the state, perform repairs, upgrading or replacement of elevators [3]. Where to get the money?

It should be noted that so far no legal documents (regulations) that would specifically examine the organization of operating the lifts in terms of condominiums are available. In practice, there are many ways to solve this problem. These primarily include the use of credit mechanism.

Simple calculations show that in a standard nine-storied building for the elevator replacement is needed about 300-350 thousand. UAH today. If the inhabitants of the house will pay monthly for 1 m<sup>2</sup> of floor space 40-50 kopecks., then in 25 years the loan will be paid. The loan can be taken out by a management company or the organization serving the elevator. All of them are economically interested in continuous work of elevators. Alternatively, you can consider equity participation of the state or municipal authority.

In Europe and Russia there is a successful practice of the institution of management companies that according to the contract with the condominium professionally serve from ten to hundreds of apartment buildings.

Table 1 – Condition of elevators update in some cities in Ukraine

Indicators	Cities of Ukraine		
	Kharkiv	Kyiv	Odesa
The number of installed elevators in residential buildings	9406	20943	4800
The number of major repairs	53	167	15
The cost of major repairs, thousand. UAH.	8292,4	26135,5	10000,0
Modernization, units	14	0	1

Despite the condominium or management company, the state is obliged, as the former owner of the house (including elevators), perform first post-privatization repair of residential building, including elevator. And then there is the question: to what extent and how the residents of the house must raise money for another repair of the house, elevator, and technical maintenance conduction.

In European countries and even in Ukraine there is a practice when the information on all types of repairs

and their estimated cost and time needed is given to dwellers in advance. This form is justified if there are no poor pensioners in the house, mothers with many children, exempts and so on. In the Ukrainian realities, in many cases it causes much resistance and reluctance to perform the suggested steps.

In industry, one of the important sources of funding for fixed assets update is depreciation. But in lifting mechanisms industry, as already noted earlier, depreciation is not charged.

The possibility of using depreciation as domestic sources for financing investments depends both on the system of state regulation of depreciation, which determines the general principles of the process, and the internal depreciation policy of enterprises, which is formed on the basis of their specialization and particular features [4].

A significant contribution in the development of theoretical and methodological foundations of depreciation was made by A.A. Arakelyan, D.A. Buranov, A.M. Birman, V.V. Alexandrov, A.S. Pavlov, L.A. Horunzhyj and others.

To the issue of the nature of depreciation and its impact on fixed assets upgrade in Ukraine were dedicated the works of such prominent scientists as S. Golov, M. Chumachenko, N. Shemyakin and others [5].

However, all the authors examined the problem of depreciation in key industries of Ukraine. By this time, almost no papers that would take into account the specific peculiarities of depreciation policy for Lifting mechanisms.

The basic principles must be:

1. The tariff for the use of the lift must be independent from the fare for housing and include two components: maintenance of lifts and overhaul, upgrade or replacement of the elevator. Technical maintenance is now charged as part of the tariff for housing, and overhaul or modernization may be conducted due to depreciation.

2. Taking into account the specific features of depreciation in elevators, most promising direction for upgrading elevators is modernization. Lifts modernization in the place of its operation is a set of works aimed to improve the technical and operational characteristics by replacing components in favor of more modern directly in the place of the exploitation without changing the lifting capacity, speed and kinematic scheme.

Modernization is different from the complete replacement as it allows update of both separate parts of the elevator, and the entire elevator in short time and with less cost of dismantling the old and installation of new equipment.

3. As the base for charging elevators depreciation instead of the current value at the time of purchase of new vehicles must be used the present value of elevators on the principle: the value of the elevator equals the original present one plus the value of the average annual increase in prices over the past years and plus value of the overhaul.

A characteristic feature of the above principle is that the value of depreciation takes into account the impact of inflation and depreciation will be charged for the entire period about the same way.

4. The residents of apartment buildings have an alternative: to collect money from each apartment every month for the future overhaul of residential building or a lift or charge depreciation on elevator and keep money in the bank on deposit account.

## Conclusions

In the result of the conducted study, given the state of elevators industry in Ukraine, it has been found that the Ministry of Regional Development, Housing and Construction together with the municipal government, representatives of the lift industry, owners of apartment buildings (condominiums) should immediately develop a program for elevators upgrade in Ukraine for the next 5 -10 years.

It has been also established that the main sources for elevators upgrade should be the depreciation income, credit system, funds of municipal government, private investments.

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## СОСТОЯНИЕ ЛИФТОВОГО ХОЗЯЙСТВА УКРАИНЫ И НЕОТЛОЖНЫЕ МЕРОПРИЯТИЯ ПО ЕГО ВОССОЗДАНИЮ

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*В статье рассматриваются неотложные мероприятия по выведению лифтового хозяйства Украины из глубокого кризисного состояния. Подчеркивается, что без разработки специальной программы при участии муниципальных органов власти, системы кредитования, организаций, которые обслуживают лифты, частных инвесторов, владельцев жилья (ОСМД), невозможно решить эту проблему. Особенное внимание уделяется организации работы и разработке программы финансового обеспечения обновления лифтов в условиях ОСМД. Высказывается предложение для обновления лифтов, используя амортизацию и выполнение обслуживания ремонта лифтов в условиях ОСМД.*

**Ключові слова:** лифтовое хозяйство, кризисное состояние, обновление, финансовое обеспечение.

## СТАН ЛІФТОВОГО ГОСПОДАРСТВА УКРАЇНИ ТА НЕВІДКЛАДНІ ЗАХОДИ ЩОДО ЙОГО ВІДТВОРЕННЯ

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*У статті розглядаються невідкладні заходи щодо виведення ліфтового господарства України з глибокого кризового стану. Підкреслюється, що без розробки спеціальної програми за участю муніципальних органів влади, системи кредитування, організацій, які обслуговують ліфти, приватних інвесторів, власників житла (ОСББ), тощо неможливо рішення цю проблему. Особлива увага приділяється організації роботи та розробці програми фінансового забезпечення відтворення ліфтів в умовах ОСББ. Висловлюється пропозиція для відтворення ліфтів використовувати амортизацію.*

**Ключові слова:** ліфтове господарство, кризовий стан, відтворення, фінансове забезпечення.